

CLAIMS:

1. A bone or cartilage implant delivery device comprising:

5 a tubular outer shaft having a proximal and distal end, a longitudinal axis, and an internal bore along the longitudinal axis of said outer shaft;

 an inner shaft having a distal end and a proximal end suitable for insertion into a defect, said inner shaft adapted to fit within said internal bore of the outer shaft
10 so that the inner shaft and the outer shaft are slidably engaged.

2. The device of claim 1 wherein one or more of the shafts comprise means to provide friction-retarded movement of the inner shaft through the outer shaft.

15 3. The device of claim 1 also comprising an implant disposed within the distal end of said outer shaft.

4. The device of claim 1 wherein the inner shaft has a cannula through its center.

20 5. The device of claim 3 also comprising at least one slot in the distal end of the outer shaft for visualizing said implant.

6. The device of claim 1 wherein the distal end of the outer shaft comprises tapered leaves.

25 7. The device of claim 1 further comprising a snap-bead groove disposed on the distal end of the outer shaft.

30 8. The device of claim 1 further comprising smooth, rounded surfaces on the proximal and distal ends of the outer shaft and inner shaft.

9. The device of claim 1 wherein a section of the inner surface of the outer shaft has serrated teeth frictionally engageable with serrated teeth on a corresponding section of the outer surface of the inner shaft.

5 10. The device of claim 1 wherein a section of the inner surface of the outer shaft has beads disposed thereon and a corresponding section of the outer surface of the inner shaft has ridges disposed thereon so that when the inner shaft is moved distally or proximally through the outer shaft, the beads frictionally engage with the ridges.

10 11. An implant cutting device for cutting off a protruding end of an implant disposed within the implant delivery device of claim 1, said cutting device comprising a base comprising a vertical hole therethrough for receiving said protruding end of said implant.

15 12. The implant cutting device of claim 11 wherein said vertical hole adapted for receiving said protruding end of said implant has an upper diameter slightly larger than the outer diameter of said shaft and a lower diameter less than the outer diameter of said shaft.

20 13. The implant cutting device of claim 11 also comprising means for receiving at least one cutting blade.

25 14. The implant cutting device of claim 11 also comprising at least one cutting blade adapted to slide within said means for receiving at least one cutting blade and cut off the protruding end of said implant.

30 15. The implant cutting device of claim 14 wherein said at least one cutting blade intersects said vertical hole at the point where said upper diameter meets said lower diameter.

16. An implant capsule loader for inserting an implant into the outer shaft of the implant delivery device of claim 1, said capsule loader comprising:

a hollow tube having a front end and a back end with an opening therethrough, and adapted to fit within the distal end of said outer shaft.

5 17. The capsule loader of claim 16 comprising a backplate disposed within said hollow tube covering the opening in the back end of said tube.

10 18. The capsule loader of claim 16 also comprising at least one flexible leaflet along the outer surface of said hollow tube fixed at the front end of said hollow tube and having a free end toward the back end of said hollow tube, said flexible leaflet having an outwardly-extending prong at the free end thereof; said prong being adapted to fit within a hole in said outer shaft.

15 19. The capsule loader of claim 18 comprising a plurality of flexible leaflets.

20. The capsule loader of claim 16 comprising an implant disposed therein.

20 21. An implant delivery system comprising:

an implant delivery device comprising a hollow outer shaft, and an inner shaft movably disposed therein; and an implant cutting device comprising means for receiving an implant protruding from said outer shaft and a cutting blade for cutting off said protruding portion.

25 22. The implant delivery system of claim 21 also comprising an implant capsule loader comprising a hollow tube adapted to contain an implant and to fit within and be attached to an end of said hollow shaft.

30 23. The implant delivery system of claim 22 also comprising an implant.

24. A method for delivering a bone or cartilage implant into a defect in a tissue having an unmeasured depth using the implant delivery device of claim 1 comprising the steps:

5 inserting said implant into the distal end of said loading device, wherein when said implant is disposed in said loading device the proximal end of the inner shaft protrudes from the proximal end of the outer shaft and the length of said implant and equals the length of the protruding section of the inner shaft;

10 inserting the proximal end of the inner shaft into the defect until the proximal end of the inner shaft contacts the bottom of the defect;

 advancing the outer shaft in the proximal direction until the proximal end of the outer shaft contacts the surface of tissue surrounding the defect, causing a
15 portion of the implant to extend beyond the distal end of the outer shaft;

 cutting off the portion of the implant extending beyond the distal end of the outer shaft, leaving a remaining portion disposed within the outer shaft;

20 placing the distal end of the loading device over the defect; and

 distally advancing the inner shaft to push the portion of the implant remaining after cutting into the defect.

25 25. The method of claim 24 further comprising placing a cap around the distal end of the outer shaft after the portion of the implant extending beyond the distal end of the outer shaft has been cut off and adding a bioactive fluid to the distal end of said outer shaft.

30 26. A kit comprising at least one bone or cartilage implant delivery device, said implant delivery device comprising:

a tubular outer shaft having a proximal and distal end, a longitudinal axis, and an internal bore along the longitudinal axis of said outer shaft; and

5 an inner shaft having a distal end and a proximal end suitable for insertion into a defect, said inner shaft adapted to fit within said internal bore of the outer shaft so that the inner shaft and the outer shaft are slidably engaged.

27. The kit of claim 26 further comprising an implant.

10 28. The kit of claim 26 further comprising a knife.

29. The kit of claim 26 comprising a plurality of bone or cartilage implant delivery devices each having different sizes of internal bores and inner shafts.